


**CITY OF CAMBRIDGE**  
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## MEMORANDUM

**To:** Cambridge Planning Board  
**From:** Joseph E. Barr, Director   
**Date:** November 27, 2018  
**Re:** Kendall Square Urban Renewal Plan (KSURP), MXD Infill Development Concept Plan Amendment (PB#315)

Boston Properties is seeking an Amendment to their Kendall Square Urban Renewal Plan (KSURP) Mixed Use Development (MXD) Infill Development Concept Plan, that include various changes, such as to relocate the location of Building B from 250 Binney Street to 325 Main Street, and to not construct a new 650-space parking garage at 250 Binney Street.

The Traffic, Parking and Transportation Department (TP&T) submitted a memo to the Planning Board dated September 26, 2018 with our initial comments on the proposed Amendment. TP&T reviewed Boston Properties' "Response to Comments", dated November 2, 2018, which included their responses to comments made at their October 2, 2018 Planning Board hearing. The Response to Comments did not directly address TP&T's September 26, 2018 Planning Board memo. However, they did respond directly to TP&T and met with us on November 21, 2018. Discussed below are TP&T's key comments, the status from our discussion with Boston Properties, and our recommendations to the members of the Planning Board:

### Automobile Parking

According to the Transportation Analysis dated September 14, 2018 by VHB on behalf of Boston Properties, the proposed Amendment will result in a small parking space shortage (approximately 86 spaces) during a few mid-day hours on weekdays (between 11 am and 1 pm) and during some peak parking months (May, September, October). In TP&T's September 26, 2018 memo to the Planning Board, we suggested that Boston Properties implement a parking management practice to permit parkers to pay by day, instead of monthly, because it encourages commuters not to drive every day due to pre-paying for monthly parking. Boston Properties has indicated that they currently offer a "Freedom Plan" at their Prudential Center Garage in Boston, which gives users an option to pay by day with a garage access tag that automatically deducts charges from the user's credit card instead of paying a monthly fee and encourages employees to make different commute mode choices each day. **TP&T believes this would be a good parking management step forward and we recommend to the Planning Board that as a Condition of the Amendment, Boston Properties should be required to offer this or a comparable parking management plan to tenants of the KSURP MXD Infill Development Concept Plan.** Boston Properties

should also evaluate the effectiveness on reducing daily parking demands and include the results of this evaluation in their transportation monitoring reports.

**TP&T recommends to the Planning Board that as another Condition of the Amendment, Boston Properties should implement a real-time parking availability system, in coordination and as approved by TP&T, CDD and Cambridge Redevelopment Authority (CRA).** The purpose of the real-time parking occupancy system would be to inform parkers (primarily daily/transient parkers) when parking garages are closed and to let them know where there are available parking spaces at Boston Properties' other parking facilities (and potentially at other commercial parking facilities in the area). The purpose would be to minimize drivers "circling" around Kendall Square looking for parking. The system should be operational prior to the occupancy permit for Building B or as approved by TP&T.

For Boston Properties to provide enhanced monitoring of the Kendall Square Urban Renewal Area's parking demands **TP&T, CDD and CRA should have access to their real-time parking occupancy data.** In addition, the KRSURP annual transportation monitoring reports should include the average weekday parking demands in tables and charts like the vehicle parking demand analysis provided in VHB's September 14, 2014 transportation analysis memo or in another format approved by TP&T (i.e. Table 10, Figures G-1 and Figure G-2). The purpose of monitoring parking is to: a.) discourage auto use, b.) accommodate the KSURP's parking demands and minimize parking spillover, and c.) learn what parking management measures are most effective.

#### **Site Plan, Access, Pedestrian and Bicycle Conditions, and Loading and Service Delivery**

In TP&T's September 26, 2018 Planning Board memo, we stated that TP&T needed further detailed review of items such as pedestrian and bicycle circulation, bike parking, and loading and service delivery. Boston Properties has affirmed they will meet the bicycle parking requirements and will address further detailed review during the Design Review stage for individual buildings. TP&T believes that this commitment is acceptable, and we **recommend to the Planning Board that a Condition of the Amendment be for these items to be addressed as a part of ongoing design review.**

#### **Transportation Mitigation and Construction Management**

TP&T stated in our September 26, 2018 Planning Board memo that because of the new square footage on Main Street from Building B, the Planning Board may want to consider asking Boston Properties for additional transportation mitigation.

For example, even with the Bluebikes station recently installed as mitigation for the 88 Ames Street residential project to serve those residents and visitors, there is still a shortfall of Bluebikes stations/docks to meet current demand. In fact, because of this current shortfall, valet bike parking for Bluebikes is now being provided near the Stata Center because there are not enough open docks.

Because Boston Properties is proposing to place hundreds of new people on Main Street in the heart of Kendall square, we believe that that Boston Properties should fund another Bluebikes station to meet future demand. **TP&T recommends to the Planning Board that as a Condition to the Amendment, Boston Properties fund a large (i.e. 23 dock) Bluebikes station to help further support the Bluebike bikesharing system in Kendall Square which will mitigate impacts from the 325 Main Street building.** The City will determine the exact location for the Bluebikes station which may be on Main Street between Ames Street and Galileo Galilei Way.

In TP&T's September 26, 2018 Planning Board memo we recommended that the Kendall Square MBTA Redline Outbound Headhouse, station/platform, and bus stops should be prominent and resilient. Boston Properties' "Response to Comments", dated November 2, 2018, stated that they are committed to working with the MBTA to explore and improve resiliency of the MBTA Redline Outbound Headhouse to flooding, such as trench drains with greater capacity than the existing systems, and mobile flood barriers at station entrances. **TP&T is pleased to hear Boston Properties commitment to the MBTA headhouse resiliency.**

In addition, it is important to remember that the KSURP MXD Infill Development Concept Plan currently requires Boston Properties to construct \$400,000 in improvements to the MBTA Redline Outbound station. Because the final design of the Outbound headhouse is yet to be finalized, and because the new location for Building B is on Main Street and adjacent to the Headhouse, **TP&T recommends that the final design and agreements with the MBTA for the headhouse and station improvements should adequately address the needed repairs at the Outbound Headhouse and station as reported by the MBTA's Site Inspection Report dated July 19, 2016. The level of adequacy shall be approved by TP&T, CDD and the CRA.**

TP&T further recommends that the current Special Permit #315 condition (page 4 in TP&T's January 11, 2017 Planning Board memo), relating to Boston Properties obtaining approval from the City and MBTA for MBTA Red Line Outbound Station improvements prior to the issuance of the Occupancy Permit for the first Commercial Building (which is now expected in October 2019) be amended to allow more time to determine what final improvements will be made to the Headhouse and station, and the due date(s) for construction of those improvements. Therefore, the timing of this item shall be subject to TP&T, CRA and MBTA approval, but no later than the issuance of the final Occupancy Permit for the 325 Main Street building or as approved by TP&T.

Finally, TP&T wants to again thank Boston Properties and the Cambridge Redevelopment Authority for working with us and we look forward to continuing to work with them as the project moves forward.



To: Joseph E. Barr, Director  
Cambridge Traffic, Parking and  
Transportation Department

Date: September 14, 2018

## Memorandum

Project #: 12959.02

From: Sean M. Manning, P.E., PTOE  
Selma Mandzo-Predzic, P.E.

Re: KSURP Infill Development  
Transportation Analysis Update (Special Permit #315) - Final

### 1. Introduction

On behalf of Boston Properties, or BP, (the Proponent), Vanasse Hangen Brustlin, Inc. (VHB) is providing an update to the Certified Transportation Impact Study (TIS) for the Kendall Square Urban Renewal Plan (KSURP) Infill Development Concept Plan in Cambridge, Massachusetts (the Project).

The original TIS was submitted to the Cambridge Traffic, Parking, and Transportation (TP&T) Department on June 23, 2016 and certified on July 14, 2016. The Proponent submitted a Special Permit application (PB#315) to the Planning Board, under Article 14, in September 2016 and received Planning Board approval in March 2017. In January 2017, VHB submitted an update to the transportation analysis that reflected changes in the proposed development program, which were documented by TP&T in a memo to the Planning Board dated January 11, 2017, in support of the Board's approval of the Special Permit for the KSURP Project.

This technical memorandum provides an updated trip generation analysis and comparison, as well as an updated parking analysis, to reflect the current development program, post Planning Board approval.

**Figure A** illustrates BP properties throughout Kendall Square, while **Table 1** summarizes the occupancy levels for each. **Figure B** shows the sites and garages that are a part of the Infill Development Concept Plan (IDCP), and **Figure C** shows the Proposed Access and Circulation throughout the district.

**Table 1** Kendall Center Buildings<sup>1</sup>

Building	Program	Occupied %
1CC (255 Main Street)	215,377 sf Office	57% occupied
2CC (Marriott Hotel)	289,813 sf (421 keys) & 42,245 sf Retail	100 % occupied
3CC (325 Main Street)	62,757 sf Office & 42,300 sf Retail	100 % occupied
4CC (90 Broadway)	216,751 sf Office & 4,486 sf retail	100 % occupied
5CC (355 Main Street)	257,880 sf Office & 14,507 sf Retail	100 % occupied
6CC (Residence Inn)	185,356 sf (221 keys) & 2,118 sf Retail	100 % occupied
7CC (415 Main Street) Broad Institute	194,096 sf Office	100 % occupied
75 Ames Street	237,057 sf Office & 5,449 sf Retail	100 % occupied; Retail is vacant
8CC (150 Broadway)	176,562 sf Office	100 % occupied
9CC (Whitehead Institute)	197,519 sf Office	100 % occupied



Building	Program	Occupied %
10CC (105 Broadway)	145,603 sf Office	13 % occupied
12CC (115 Broadway)	233,945 sf Office	100 % occupied
14CC (250 Binney)	62,576 sf Office	100 % occupied
15CC (125 Broadway)	218,288 sf Office	100 % occupied
17CC (300 Binney)	189,661 sf Office	100 % occupied
9CC (Whitehead Institute)	197,519 sf Office	100 % occupied
9CC (Whitehead Institute)	197,519 sf Office	100 % occupied

1-GFA as occupied in October 2017

## 2. Program Comparison

The original TIS from 2016 proposed 1,095,200 GSF of office, retail, and residential space. In January 2017, the program was reduced to a total of 1,066,500 GSF in order to strengthen the public realm features of the Project, and accelerate the development schedule.

As the overall project continues to evolve, some changes are being proposed to the 2017 program that was approved as part of the Special Permit process. The new program will maintain the approved 1,066,500 GSF development envelope, but include the following specific changes from the approved 2017 IDCP and accompanying TIS Update:

- Residential North and Residential South total unit count is being increased to 494 units from the approved 425 units (which is still less than the original 560 residential units proposed in the 2016 TIS). The total square footage dedicated to residential is remaining constant at 420,000 GSF.
- Building A, 145 Broadway (aka 11 Cambridge Center), is being adjusted from the approved 375,132 Net New GSF to 362,978 Net New GSF.
- Building B, originally proposed at 250 Binney Street (aka 14 Cambridge Center), will now be constructed at 325 Main Street (aka 3 Cambridge Center), containing 268,222 of Net New GSF, referred to as Building B' and increased from the approved 256,068 Net New GSF at Building B.
- The existing 250 Binney Street building will not be demolished, as previously contemplated, but instead remain operational at the existing 62,576 GSF office use.
- The 650-space parking garage that was associated with the originally anticipated re-developed 250 Binney Street building is no longer part of the Project.
- No new parking structures will be constructed at Building B' as part of this Project.

- The existing three campus garages (Yellow, Green and Blue) as well as the previously approved new garage at 145 Broadway, are expected to serve current and future users, through the utilization of surplus capacity that exists today, the implementation of shared parking and other parking management strategies.

**Table 2** provides a summary of the proposed development program, the existing square footage to be demolished, and the resulting new-net infill program. Please note that the future Building B' retail component will be similar in size as the existing building retail component, therefore the table below shows no additional new retail square footage. The future Building B' retail component will include a replacement of the MIT coop as well as additional retail opportunities, totaling approximately 42,300 square feet.

**Table 2 Proposed Development Program<sup>1</sup>**

Project Component	Proposed Project Program	Existing to be Removed	Net-New Program
<b>Building A - 145 Broadway</b>	<b><u>441,614 sf</u></b>	<b><u>(-78,636) sf</u></b>	<b><u>362,978 sf</u></b>
(Office)	432,914 sf	(-78,636) sf	354,278 sf
(Retail/Active Use)	8,700 sf	-0 sf	8,700 sf
<b>Building B' - 325 Main St <sup>#</sup></b>	<b><u>385,423 sf</u></b>	<b><u>(-117,201) sf</u></b>	<b><u>268,222 sf</u></b>
(Office)	343,123 sf	(-74,901) sf	268,222 sf
(Retail/Active Use)	42,300 sf	(-42,300) sf	0 sf <sup>##</sup>
<b>Residential North - 135 Broadway</b>	<b><u>71,300 sf</u></b>	<b><u>-0 sf</u></b>	<b><u>71,300 sf</u></b>
(Residential)	70,000 sf (90 units)	-0 sf	70,000 sf (90 units)
(Retail/Active Use)	1,300 sf	-0 sf	1,300 sf
<b>Residential South - 135 Broadway</b>	<b><u>350,000 sf</u></b>	<b><u>-0 sf</u></b>	<b><u>350,000 sf</u></b>
(Residential)	350,000 sf (404 units)	-0 sf	350,000 sf (404 units)
<b>75 Ames St / Broad Institute<sup>2</sup></b>	<b><u>14,000 sf</u></b>	<b><u>-0 sf</u></b>	<b><u>14,000 sf</u></b>
(Office)	14,000 sf	-0 sf	14,000 sf
<b>TOTAL</b>	<b><u>1,324,913 sf</u></b>	<b><u>(-258,413) sf</u></b>	<b><u>1,066,500 sf</u></b>
(Office)	852,613 sf	(-216,113) sf	636,500 sf
(Retail/Active Use) <sup>3</sup>	52,300 sf	-42,300 sf	10,000 sf
(Residential) <sup>4</sup>	420,000 sf (494 units)	-0 sf	420,000 sf (494 units)

1 – GFA/GSF as defined in Article 2.0 of the Cambridge Zoning Ordinance

2 – Represents the conversion of existing mechanical space to be re-purposed/fit-out into leasable commercial/office space at the Broad Institute's 75 Ames Street location. The Applicant is not responsible for the execution of this component of the Project.

3 – Active Ground Floor Uses, can include retail uses and active public gathering space (whether open or enclosed) where that ground floor fronts Main Street, Broadway or Ames Street, per Article 14.38 of the Cambridge Zoning Ordinance.

4 – Total residential SF of 420,000 to be split between Residential North and Residential South

<sup>#</sup>previously approved 256,068 SF was for Building B at 250 Binney Street

<sup>##</sup>new Building B' will contain retail at approximately the same square footage as existing retail to be demolished, which is why "net-new" column in table shows a value of "0"

**Table 3** provides a summary of the proposed program and a comparison to the Planning Board approved program. Compared to the previously approved program, there is an increase of 9,366 GSF of office, a reduction of 9,366 GSF of retail, and an increase of 69 residential units (although the overall GSF of the project remains constant).

**Table 3 Proposed Development Program VS Previously Approved Program<sup>1</sup>**

Project Component	2018 Proposed Net-New Program	2017 Previously Approved Program	Difference
<b>Building A - 145 Broadway</b>	<b><u>362,978 sf</u></b>	<b><u>375,132 sf</u></b>	<b><u>(-12,154) sf</u></b>
(Office)	354,278 sf	365,095 sf	(-10,817) sf
(Retail/Active Use)	8,700 sf	10,037 sf	(-1,337) sf
<b>Building B' - 325 Main St</b>	<b><u>268,222 sf</u></b>	<b><u>256,068 sf<sup>#</sup></u></b>	<b><u>+12,154 sf</u></b>
(Office)	268,222 sf	248,039 sf	+20,183 sf
(Retail/Active Use)	0 sf	8,029 sf	(-8,029) sf
<b>Residential North - 135 Broadway</b>	<b><u>71,300 sf</u></b>	<b><u>71,300 sf</u></b>	<b><u>0 sf</u></b>
(Residential)	70,000 sf (90 units)	70,000 sf (70 units)	0 sf (+20 units)
(Retail/Active Use)	1,300 sf	1,300 sf	0 sf
<b>Residential South - 135 Broadway</b>	<b><u>350,000 sf</u></b>	<b><u>350,000 sf</u></b>	<b><u>0 sf</u></b>
(Residential)	350,000 sf (404 units)	350,000 sf (355 units)	0 sf (+49 units)
<b>75 Ames St / Broad Institute<sup>2</sup></b>	<b><u>14,000 sf</u></b>	<b><u>14,000 sf</u></b>	<b><u>0 sf</u></b>
(Office)	14,000 sf	14,000 sf	0 sf
<b>TOTAL</b>	<b><u>1,066,500 sf</u></b>	<b><u>1,066,500 sf</u></b>	<b><u>0 sf</u></b>
(Office)	636,500 sf	627,134 sf	9,366 sf
(Retail/Active Use) <sup>3</sup>	10,000 sf	19,366 sf	(-9,366) sf
(Residential) <sup>4</sup>	420,000 sf (494 units)	420,000 sf (425 units)	0 sf (+69 units)

1 – GFA/GSF as defined in Article 2.0 of the Cambridge Zoning Ordinance

2 – Represents the conversion of existing mechanical space to be re-purposed/fit-out into leasable commercial/office space at the Broad Institute's 75 Ames Street location. The Applicant is not responsible for the execution of this component of the Project.

3 – Active Ground Floor Uses, can include retail uses and active public gathering space (whether open or enclosed) where that ground floor fronts Main Street, Broadway or Ames Street, per Article 14.38 of the Cambridge Zoning Ordinance.

4 – Total residential SF of 420,000 to be split between Residential North and Residential South

<sup>#</sup>previously approved 256,068 SF was for Building B at 250 Binney Street

**Table 4** provides a summary of the parking program for vehicle and bicycle parking, and compares it to the Special Permit approval from March 2017. A detailed parking analysis is provided later in this document.

**Table 4 Proposed Parking for Development Program VS Previously Approved**

Project Component	2018 Proposed Parking	2017 Approved Parking <sup>1</sup>	Difference
Vehicle Parking Spaces (Net/Total Campus)	413 (3,121)	785 (3,493)	(-372)
Long-Term Bike Parking Spaces	763	633	+130
Short-Term Bike Parking Spaces	131	102	+29

1 – Previously Approved as part of Special Permit Decision PB#315 in March 2017

### 3. Trip Generation

The trip generation estimates for the Project have been updated to reflect the shift of 9,366 GSF in program land use and increase of 69 residential units from the 2017 Approved Program. This updated trip generation uses the same methodology as the original certified TIS, including mode share assumptions, average vehicle occupancy rates and Institute of Transportation Engineers (ITE) Land Use Codes and trip rates.

These estimates were based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition) rates for Apartment (LUC 220), Shopping Center (LUC 820), and General Office Building (LUC 710). ITE unadjusted vehicle trips were converted into person trips by applying the national AVO (average vehicle occupancy) factors of 1.13 for residential and work-related trips and 1.78 for retail trips. Then local AVOs were used to convert person trips back into vehicle trips once mode shares were applied. The same mode shares, as presented in **Table 5**, were used for both the original certified TIS and this updated analysis. Note that the new Building B being located directly adjacent to the Red Line could induce a higher transit mode share than that used to support the transportation analysis. However, this approach would be speculative. Note, that the study has maintained the same mode share profile that was used in the Certified TIS to provide opportunity to clearly understand the transportation and traffic impact of shifting the Building B location. For consistency, and in an effort to be conservative, the previously-approved TIS mode shares have been maintained in this TIS Update.

**Table 5 Project Mode Shares (per Certified TIS)**

Mode	Residential <sup>1</sup>	Office <sup>2</sup>	Retail <sup>2</sup>
Vehicle <sup>3</sup>	32%	34%	34%
Transit	30%	37%	37%
Walk	25%	6%	6%
Bike	10%	9%	9%
Other	3%	14%	14%

1 – City of Cambridge K2 Plan Enhanced TDM Mode Shares

2 – Kendall Square Urban Renewal Area 2014 Report Mode Shares  
3 – Vehicle mode share includes drive alone (SOV) and carpool (HOV) trips

### ***Trip Generation Comparison***

The resulting new trip generation estimates that reflect the changes in GSF and residential units proposed, are summarized in **Table 6** (vehicle trips) and **Table 7** (transit trips) and compared to previously approved trips. The detailed trip generation tables by land use are included in the Appendix.

**Table 6      Vehicle Trip Generation Comparison**

	<b>2018 Proposed Program</b>	<b>2017 Previously Approved Program</b>	<b>Difference</b>
<b>Daily Trips</b>			
In	1,612	1,642	(-30)
Out	<u>1,612</u>	<u>1,642</u>	<u>(-30)</u>
Total	3,224	3,284	(-60)
<b>AM Peak Hour Trips</b>			
In	265	264	+1
Out	<u>102</u>	<u>93</u>	<u>+9</u>
Total	367	357	+10
<b>PM Peak Hour Trips</b>			
In	123	124	(-1)
Out	<u>264</u>	<u>265</u>	<u>(-1)</u>
Total	387	389	(-2)

Notes: Trip Generation estimates based on ITE Trip Generation Manual, 9th Edition, using: LUC 220 – Apartment; LUC 820 - Shopping Center; LUC 710 - General Office Building; Mode shares based on FST Study and Kendall Square Advisory Committee Meeting presentation from January 26, 2012 / k2c2; VOR stands for Vehicle Occupancy Rate from 2009 NHTS; Local VOR from American Community Survey 2006-2010; Census Tract 3523 and 3524

**Table 7 Transit Trip Generation Comparison**

	<b>2018 Proposed Program</b>	<b>2017 Previously Approved Program</b>	<b>Difference</b>
<b>Daily Trips</b>			
In	1,953	2,008	(-55)
Out	<u>1,953</u>	<u>2,008</u>	<u>(-55)</u>
Total	3,906	4,016	(-110)
<b>AM Peak Hour Trips</b>			
In	342	342	0
Out	<u>116</u>	<u>108</u>	<u>+8</u>
Total	458	450	+8
<b>PM Peak Hour Trips</b>			
In	143	146	(-3)
Out	<u>333</u>	<u>337</u>	<u>(-4)</u>
Total	476	483	(-7)

Notes: Trip Generation estimates based on ITE Trip Generation Manual, 9th Edition, using:  
LUC 220 – Apartment; LUC 820 - Shopping Center; LUC 710 - General Office Building  
Mode shares based on FST Study and Kendall Square Advisory Committee Meeting presentation from January 26, 2012 / k2c2

The trip generation estimates shown in Tables 5 and 6 for the updated program show a slight reduction in daily and evening peak hour vehicle and transit trips and a slight increase in the morning peak hour vehicle and transit trips compared to the previous approval. This adjustment does not materially change the overall transportation impacts that have been documented through previous approvals, and therefore no updated traffic or transit operations analyses have been conducted and no changes in transportation mitigation actions are proposed in connection with this program update.

#### **4. Vehicle Parking Demand Analysis**

A vehicle parking assessment was conducted as part of the certified TIS in 2016, and again as part of the Special Permit process in 2017. With this 2018 program update, the parking analysis has been revisited, and a summary of our demand methodologies and findings are provided in this section of the technical memorandum.

### ***Parking Supply in the KSURP Area***

As noted previously, the 650-space parking garage that was associated with the originally anticipated re-developed Building B (250 Binney Street), is no longer part of the Project. The new site for Building B' is at 325 Main Street and does not include construction of any new vehicle parking on-site, but instead the existing three campus garages (Yellow, Green and Blue) as well as the previously approved 145 Broadway new garage, will serve current and future users, through the utilization of surplus capacity that exists today, the implementation of shared parking and other parking management strategies.

**Table 8** compares the previously approved parking supply to the newly proposed parking supply.

**Table 8 Proposed Parking for KSURP Campus Vs Previously Approved**

<b>Parking Location</b>	<b>2018 Proposed Parking</b>	<b>2017 Previously Approved Parking<sup>1</sup></b>	<b>Difference</b>
Blue Garage	955	955*	0
Yellow Garage	885	734	+151
Green Garage	824	804	+20
145 Broadway	457	350	+107
250 Binney Street	0	650	(-650)
<b>Vehicle Parking Spaces</b>	<b>3,121</b>	<b>3,493</b>	<b>(-372)</b>

1 – Previously Approved as part of Special Permit Decision PB#315 in March 2017

\*original parking supply at this site is permitted as 1,170 spaces, however with the construction of 135 Broadway residential buildings the Proponent has estimated that approximately 215 spaces will be permanently taken out of service. The actual parking space reduction will be determined during Design Review for 135 Broadway

As noted above, and illustrated in **Figure D**, the KSURP campus-wide vehicular parking supply will change from the approved 3,493 spaces to 3,121 parking spaces. The 3,493-parking space supply number included the construction of a 650-space parking garage at 250 Binney Street, which is no longer part of the program. The "loss" of the 650 spaces is being balanced out by the following proposed reallocations in the existing garages, which result in a net loss of 372 spaces:

- Blue Garage was approved for 955 spaces, which takes into consideration a loss of 215 spaces for the construction of the Residential North and Residential South buildings at 135 Broadway. Depending on construction methods and means, there may be an opportunity to limit the loss of parking to a number that is smaller than the originally estimated 215 parking spaces. The Proponent will track construction progress and look for opportunities to increase parking supply at this location in the future, if found to be needed.

- Yellow Garage is currently recorded at 734 parking spaces and the Proponent is seeking approval to reconfigure the garage to add another 151 spaces, for a total of 885 parking spaces. The addition of seven (7) spaces will be accomplished through more efficient self-parking striping and provision of 144 managed/valet parking spaces.
- Green Garage was originally recorded at 844 parking spaces, however with the construction of 88 Ames Street the supply was contemplated to be reduced by 40 spaces, to 804 as noted in the previous approval. 88 Ames Street has been completed and the total number of permitted parking spaces in the Green Garage is 824 spaces. **Figures E-1 through E-3** show layout of the Green Garage for 824 spaces, as re-registered with the City of Cambridge in July of 2018.
- 145 Broadway Garage is currently being constructed with 350 parking spaces and as part of this update the Proponent is seeking approval to add 107 spaces to this garage through more efficient self-parking striping and provision of managed/valet parking spaces. **Figures F-1 through F-4** show a proposed layout and summary of the 145 Broadway Garage for 457 spaces.

#### ***Future Parking Supply - Zoning Requirements***

As defined in Article 14 of the City of Cambridge Zoning Ordinance, the parking ratios for the Kendall Center Mixed Use Development (MxD) District, located within the KSURP Area, are presented in **Table 9**.

**Table 9      Zoning Requirements for Parking**

	<b>Zoning Requirements (Article 14)</b>
Office	No minimum Max 0.9 spaces / 1,000 GFA
Residential	Min 0.4 spaces / unit Max. 0.75 spaces / unit
Retail	No minimum Max 0.5 spaces / 1,000 GFA

Despite the proposed reduction in overall parking supply in the area, the project will meet the zoning requirements under Article 14. As proposed the project will have a Maximum of 573 office use parking spaces (0.9 spaces / 1,000 sf based on the approximately 636,500 net new office space GFA) and a Minimum of 310 parking spaces for the 774 residential units (0.4 spaces / dwelling unit).



### ***Existing Parking Demand Analysis***

The Proponent compiled parking utilization data for their three garages in Kendall Square (Green Garage, Yellow Garage, and Blue Garage), broken out by contract/monthly users and transient users. Data was provided for 260 workdays during the 2017 calendar year, and showed that the months of May, September and October experienced the highest garage occupancies, with October representing the highest of the three peak months.

**Table 10** summarizes the contract and transient hourly occupancy for all three garages combined, during an average weekday (Tuesday – Thursday) in October 2017.

**Table 10 Kendall Square BP Garage Occupancies (October 2017, Average Weekday)**

<b>Time of Day</b>	<b>Contract</b>	<b>Transient</b>	<b>Total</b>	<b>Percent Occupied*</b>
5:00 AM	136	27	163	6%
6:00 AM	220	67	287	11%
7:00 AM	420	126	546	20%
8:00 AM	772	193	965	36%
9:00 AM	1,230	252	1,482	55%
10:00 AM	1,648	305	1,953	72%
11:00 AM	1,837	332	2,169	80%
12:00 PM	1,876	333	2,209	82%
1:00 PM	1,870	325	2,195	81%
2:00 PM	1,852	297	2,149	79%
3:00 PM	1,745	226	1,971	73%
4:00 PM	1,511	182	1,693	63%
5:00 PM	1,072	143	1,215	45%
6:00 PM	643	130	773	29%
7:00 PM	370	111	481	18%
8:00 PM	234	93	327	12%
9:00 PM	186	67	253	9%
10:00 PM	157	40	197	7%
11:00 PM	139	26	165	6%

Time of Day	Contract	Transient	Total	Percent Occupied*
12:00 AM	126	25	151	6%
1:00 AM	121	25	146	5%
2:00 AM	119	24	143	5%
3:00 AM	118	24	142	5%
4:00 AM	122	23	145	5%

Source: BP Parking Management Office

\*Percent occupied based on 2017 existing operational parking supply in the complex, recorded at 2,708 vehicle parking spaces, and not the special permit approved 3,494 spaces

As can be seen from Table 10, October 2017 showed a maximum occupancy of 2,209 vehicles in all three garages combined, or 82 percent occupancy of total existing parking supply (2,708 spaces) in the three garages. The maximum occupancy occurred around 12:00PM. **Figure G-1** illustrates the relationship of total area parking demand vs. supply for a peak weekday/peak month condition.

### ***Future Parking Demand***

As part of the more recent program change, an updated parking demand analysis was developed based on actual garage utilization information and usage.

**Table 11** summarizes the estimated parking demand generated by each building, for both the day-time and the night-time (or overnight) hours. The parking demand was calculated from actual Cambridge Center garage utilization data.

**Table 11 Estimated Future Parking Demand**

<b>Project Component</b>	<b>Size</b>	<b>Estimated Day-Time Demand</b>	<b>Estimated Night-Time Demand</b>
Building A (145 Broadway / 11CC)	354.3 KSF Office <sup>1</sup>	315	0
Residential South (135 Broadway)	404 Units <sup>2</sup>	121	202
Residential North (135 Broadway)	90 Units	27	45
Broad Institute Conversion (75 Ames)	14 KSF Office	12	0
88 Ames Street	280 Units	84	140
Building B (325 Main Street / 3CC)	268.2 KSF Office	239	0
	<b><u>Total</u></b>	<b><u>798</u></b>	<b><u>387</u></b>
	<b>Office 636.5 sf</b>	<b>566</b>	<b>0</b>
	<b>Resi. 774 units</b>	<b>232</b>	<b>387</b>

<sup>1</sup> A day-time demand ratio of 0.89 spaces / KSF was recorded by Boston Properties, to reflect current 2017 utilization rates at the KSURP garages. This existing ratio was applied to future project components to estimate future parking demand during the daytime hours. Overnight parking is not provided for office uses. See Appendix.  
<sup>2</sup> The residential daytime demand ratio was calculated using City of Cambridge TDM/Survey data from AvalonBay Apartments (2 Leighton / 10 Glassworks – 2017 survey) at 0.3 spaces / dwelling unit; while the night-time parking demand is calculated at 0.5 spaces / dwelling unit, also included in the Appendix

In addition to the estimated parking demand generated by the proposed Project components, Boston Properties will have additional parking commitments for space that is currently unoccupied or unleased at 105 Broadway (10 CC), and the CIC (1CC). The unoccupied/unleased spaces adds up to approximately 225 KSF, which calculates to approximately 200 parking spaces of future demand.

The concept of shared parking recognizes that peaking for different land uses occur at different times. For example, the office demand peaks during the middle of the work day when most employees are at work and residential demand peaks overnight when most residents are home. So, instead of building sufficient parking to support each Individual land use's peak demand, the site supplies enough parking to support the entire site's peak, assuming that each land use will draw from a common parking supply.

### ***Future Parking Supply vs. Demand***

As detailed in the previous sections, and summarized in **Table 10** below, the future parking demand is conservatively estimated at 3,207 spaces which includes a demand of 798 spaces for proposed Project components, plus 200 spaces from additional requirements added to the existing peak demand of 2,209 spaces.

**Table 10 Summary of Estimated Future Parking Demand**

<b>Parking Component</b>	<b>Size</b>	<b>Estimated Parking Demand (# spaces)</b>
Proposed Project Program	636.5 Ksf Office 774 Resi Units	798
Additional Commitments	225.0 Ksf Office	200
Existing Demand	2.5 Mill SF (+/-)	2,209
	<b>Total</b>	<b>3,207</b>

The estimated parking demand is then compared to the proposed future parking supply of 3,121 spaces, which yields a small peak period shortage of 86 spaces, as shown in **Table 11** below. **Figure G-2** illustrates the relationship of total area parking demand vs. supply for a peak weekday/peak month condition under future conditions with the entire Project constructed and fully occupied.

**Table 11 Estimated Future Parking Demand VS. Future Parking Supply**

<b>Estimated Future Parking Demand</b>	<b>Estimated Future Parking Supply</b>	<b>Shortage</b>
3,207 spaces	3,121 spaces	-86 spaces

Note that the 86-space parking shortage is **representative of the worst-case scenario that would be experienced during the peak hour of the peak day of the peak month**, with 100% of the Project square footage leased out. The following are key points to be made in this context:

- 86 space shortage in the context of 3,000+ space parking supply (~3%) is very small
- This condition will likely occur only on peak weekdays during peak months
- This condition is projected to occur during peak hours only (less than 2 hours per day, on these peak days)
- Assumes the Project is 100% leased and fully occupied (very conservative)

During those peak occupancy times, the following will occur to manage the shortage:

- Boston Properties will monitor real-time utilization of the garages, and sometimes on a busy day, typically between 11am and 1pm, the garages will close to transient parkers.

- Transient parkers are people who pull a ticket and pay for the actual time in which they use the garage. Even when garages are closed, the entrances are signed so that it is clear that the garages are open to monthly passholders.
- Boston Properties will continue to monitor long term parking trends to understand how demand conditions are changing in light of work habits, travel behavior and emerging technologies such as autonomous vehicles.
- Boston Properties will provide to the City on an annual basis, parking and monitoring data relevant to parking utilization as required by PTDM measures.

## 5. Bicycle Parking

The Project will provide 763 long-term bike parking spaces and 131 short-term spaces, as required by zoning and City of Cambridge Bicycle Parking Guidelines. On-going discussions with City staff as well as individual building design reviews will further refine the exact configuration and location of long- and short-term bicycle parking.

Figures H-1 through H-4 illustrate preliminary bicycle parking locations for the three development sites.

Table 12 shows the required long and short-term bicycle parking spaces per building.

**Table 12 City of Cambridge Zoning Required Project Bicycle Parking**

Project Component	Size	Long-Term Category* / Rate	Spaces <sup>2</sup>	Short-Term Category* / Rate	Spaces <sup>2</sup>
135 Broadway North (Residential)	90 units	R2: 1.00 - 1.05 space per unit <sup>1</sup>	94	R2: 0.10 spaces per unit	9
135 Broadway North (Retail)	1,300 sf	N4: 0.10 spaces per 1,000 sf <sup>3</sup>	1	N2: 0.60 spaces per 1,000 sf	1
135 Broadway South (Residential)	404 units	R2: 1.00 - 1.05 space per unit <sup>1</sup>	424	R2: 0.10 spaces per unit	41
145 Broadway (Office)	432,914 sf	N1: 0.30 spaces per 1,000 sf <sup>3</sup>	130	N5: 0.06 spaces per 1,000 sf	26
145 Broadway (Retail)	8,700 sf	N4: 0.10 spaces per 1,000 sf <sup>3</sup>	1	N2: 0.60 spaces per 1,000 sf	6
325 Main St / 3CC (Office)	343,123 sf	N1: 0.30 spaces per 1,000 sf <sup>3</sup>	103	N5: 0.06 spaces per 1,000 sf	21
325 Main St / 3 CC (Retail)	42,300 sf	N4: 0.10 spaces per 1,000 sf <sup>3</sup>	5	N2: 0.60 spaces per 1,000 sf	26
75 Ames St / Broad Institute (Office)	14,000 sf	N1: 0.30 spaces per 1,000 sf <sup>3</sup>	5	N5: 0.06 spaces per 1,000 sf	1
<b>Total</b>			<b>763</b>		<b>131</b>
		Office	238	Office	48
		Retail	7	Retail	33
		Residential	518	Residential	50

\*Category and rates as defined by the City of Cambridge Bicycle Parking Guide and Article 6 City of Cambridge Zoning

1 – Per Zoning 6.107.2: Category R2 (Multifamily Dwellings) 1.00 long-term space per unit for the first 20 units in a building; 1.05 spaces per unit for all units over 20 in a building

2 – Wherever the application of such rate results in a fractional value such fraction shall be considered one required Bicycle Parking Space.

3 – Per Zoning 6.107.5 - a: For non-residential uses, up to 20% of the required number of Long-Term Bicycle Parking Spaces or 4 spaces, whichever is greater, may be provided as Short-Term Bicycle Parking Spaces

## **6. Truck Loading/Deliveries and Trash Removal**

Loading and service to portion of the Project, including the proposed Broad Institute Office Conversion, and Three Cambridge Center (Building B') will use existing loading facilities. The new 145 Broadway loading docks have been designed and located on-site, to minimize impact to Broadway. The proposed Residential North and South buildings may use existing infrastructure within the area to accommodate loading, parking laybys on the West Service drive and potentially smaller truck docks access on the West service drive. The details of loading will be submitted as part of the design Review process.

## **Conclusion**

The trip generation estimates for the Project have been updated to reflect the change in the Project program from the special permit approval from 2017. The trip generation estimates for the updated program show a slight reduction in daily vehicle trips (-60 trips), and evening peak hour vehicle trips (-2 trips) and a slight increase in the morning peak hour vehicle trips (+10 trips). We believe that this change does not materially change the overall transportation impacts that are expected and documented in the certified TIS.

Bicycle parking will be provided to meet City of Cambridge Bike requirements.

The proposed program update is requesting a reduction in vehicle parking, from previous special permit approval. The updated analyses indicate that the new parking being supplied, together with the existing parking, will provide sufficient parking to meet demand, throughout the vast majority of the year. In a small number of instances, the parking demand could potentially exceed the available parking by up to 86 spaces, for a very short duration (1-2 hours) mid-day during peak months only. However, with the implementation of the outlined TDM strategies, it is anticipated that parking supply will sufficiently serve the parking demand of the Project. The analysis also indicated that the overall parking demand within the KSURP area will be able to provide enough parking for the area residents, tenants and visitors with the proposed TDM measures and close monitoring of each garage.

Emerging technologies and mobility tech companies such as nuTonomy have brought a fleet of autonomous vehicles (AVs) to the City of Boston Seaport District, and Lyft predicts a full fleet of shared-autonomous vehicles (SAVs) within a five-year timeframe. Additionally, in April 2018, the City of Cambridge voted to begin AV testing on city streets. Over time, a functioning SVA fleet will likely induce a fundamental change in trip-making behaviors within dense urban areas like Kendall Square for both work and recreational trips. Autonomous vehicles, particularly SAV's, are expected to reduce future parking demand by enabling families that would typically purchase more than one vehicle to share a single vehicle throughout the day. SAV's can eliminate this need altogether by providing subscription service for mobility on-demand. As such, SAVs can change an individual or family's decision to own an automobile. The Project's office, hotel and retail uses will also benefit from AVs and SAVs. Parking demand for these uses could be significantly reduced given the improved access to MBTA's transit network. Further, AV's can alter the size and shape of parking facilities. AVs can drop their riders off at the curb, they can park themselves in parking stalls of reduced width, requiring no accommodation for door swing. In addition, autonomous vehicles will be able to stack within parking facilities and arrange themselves in the most efficient arrangements.




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## MEMORANDUM

**To:** Cambridge Planning Board  
**From:** Joseph E. Barr, Director   
**Date:** September 26, 2018  
**Re:** Kendall Square Urban Renewal Plan (KSURP), MXD Infill Development Concept Plan Amendment (PB#315)

The Traffic, Parking, and Transportation Department (TP&T) has been working with Boston Properties Limited Partnership and their consultants, on the Kendall Square Urban Renewal Plan (KSURP), Mixed Use Development (MXD) Infill Development Concept Plan over the course of a number of years. The Project received a Special Permit (PB#315) in March 2017 and the 145 Broadway Building (Building A) is currently under construction.

Boston Properties is seeking an amendment to their Infill Development Concept Development Plan that requires approval from the Cambridge Planning Board. The following are some key changes or aspects of the Amendment:

### **MXD Infill Development Concept Plan Program Changes:**

- The overall total 1,066,500 Gross Square Feet (GFA) approved in the Planning Board Special Permit will not change.
- There will be an Increase of 9,366 square feet(sf) of office space and a decrease in 9,366 sf of retail/active use space.
- Building B, originally located at 250 Binney Street, will be relocated to 325 Main Street.
- A 650-space parking garage at 250 Binney Street will not be constructed, however 278 parking spaces will be added as managed (i.e. tandem and valet parking) spaces at Boston Properties other garages within Kendall Square.
- The total number of residential units will remain at up to 425 units. It should be noted, however that the updated traffic analysis had assumed a change from 425 to 494 units (+69 units); the Applicant should clarify why there are differences.

### **Trip Generation:**

- Because the Amendment has no change in the overall total GFA and a relatively small change in the land-use mix, the changes in the Project's Traffic Impacts Study (TIS) trip generation estimates are minimal.
- A full transportation analysis memo was completed by VHB, dated September 14, 2018 and found the following:

- Daily vehicle trips change from 3,284 to 3,224 (-60 daily vehicle trips).
- Morning peak hour vehicle trips change from 357 to 367 (+10 AM peak hour vehicle trips).
- Evening peak hour vehicle trips change from 389 to 387 (-2 PM peak hour vehicle trips).
- The updated trip generation analysis assumed the same mode shares as the original, Certified TIS.

**Vehicle and Bicycle Parking:**

- Because the 650-space parking garage at the original Building B location at 250 Binney Street will not be built, the Amendment proposes to add 278 new parking spaces to other existing parking garages, resulting in the overall number of parking spaces for the MXD Infill Development Concept Plan changing from 3,493 to 3,121 parking spaces (-372 spaces).
- The original approved MXD Infill Development Concept Plan Planning Board Special Permit had 785 net new parking spaces. This Amendment modifies this to 413 net new parking spaces. In other words, even though the Amended Plan reduces the number of parking spaces from the original approved Special Permit by 372 spaces, the total number of parking spaces in the Kendall Square area will still increase, but not by as many new spaces.

TP&T has been working with Boston Properties and their consultant team and offers the Planning Board the following initial comments on the proposed MXD Infill Development Concept Plan Amendment:

**Traffic Impact Comments:**

- TP&T worked with Boston Properties' traffic consultant, VHB, on an analysis to update the Project's Transportation Impact Study's trip generation and parking analysis.
- The increase in office space and decrease in retail space slightly increased the morning peak hour vehicle trips, because office use creates greater morning trips than retail use (+10 morning peak hour vehicle trips).
- For the evening peak hour, there was little to no change in vehicle trips (-2 evening peak hour vehicle trips).
- Similarly, the number of transit, bicycling and walking trips also had a minimal change, which is largely because the updated trip generation analysis assumed the same mode shares as the Certified TIS, to allow an apples-to-apples comparison that provides the best understanding of the Amendment's changes in trip generation. However, it is possible that there could be a higher transit mode share since Building B will now be located adjacent to the MBTA Red Line Kendall Square station. (The TIS assumed 34% of office workers would drive to work and 37% would take transit).
- There are inconsistencies between VHB's Transportation analysis update memo dated September 14, 2018 and the Special Permit Amendment for the number of short-term and long-term bicycle parking spaces, and number of residential housing units that should be corrected or clarified. However, TP&T believes that the Amendment will not substantially change the overall findings in the original TIS even after these minor discrepancies are amended.

**Parking Comments:**

- TP&T worked with VHB on analyzing the parking changes in the Amendment.
- Parking for the MXD Infill Development Concept Plan will be served by four garages: Blue, Yellow, Green and the new 145 Broadway building/garage, which is currently under construction.
- Instead of constructing the 650-parking space garage, the Amendment proposes to add approximately 278 managed parking spaces in the Yellow, Green and 145 Broadway garages (i.e., valet parking), without building any new facilities.



- TP&T's primary concern with managed parking is that if it doesn't function efficiently, more people may choose to park their cars on the city streets. However, as a general principal, TP&T supports less parking to discourage automobile use and encourage more sustainable travel, such as transit, walking and bicycling. The proposed Amendment to add managed parking spaces could also be an insightful test case of increasing the use of managed parking as an alternative to building new facilities.
- Boston Properties' three currently open parking garages combined (2,708 spaces) had an 82% peak parking occupancy rate at 12 pm in October of 2017. That existing reserve parking capacity was considered in the parking analysis.
- VHB's parking analysis found that the reduction in parking for the overall MXD Infill Development Concept Plan (from 3,493 to 3,121 spaces) would result in a parking shortage of about 86 spaces, which is a small percentage (2.8%) of the total future parking supply of 3,121 spaces, and likely to occur only on a peak weekday during peak occupancy months only and during less than 2 hours per day at these times.
- When all the parking garages are full, Boston Properties proposes to temporarily close the parking garages to transient/hourly parkers, while keeping the entrances open to monthly pass holders. This is a common practice in parking garage management, however TP&T notes that best practices are changing, and monthly parkers are beginning to be charged daily (and billed at the end of a month for the days they parked), instead of paying a full month ahead of time. This encourages commuters to not drive every day of the month because they already pre-paid for parking. MIT has successfully implemented this approach for their campus parking, resulting in significant reductions in parking demand. Based on initial discussions, the Applicant seems open to some version of this system, as a means of better managing parking demand.
- In general, TP&T supports the updated parking plan for the MXD Infill Development Concept, which involves forgoing building new structured parking, and instead, maximizes existing parking using better management techniques. However, this will create a need for enhanced monitoring of parking use, to better inform future decisions about how next to manage the parking within the MXD area. Information on the parking management and utilization should be shared with TP&T, the Community Development Department (CDD) and Cambridge Redevelopment Authority (CRA). The management of the parking should also allow flexibility for changes to the parking management program if needed.
- Because of the complexity of the changes to the parking supply and the analysis that supports those changes, we recommend that the Applicant present this analysis during their Planning Board hearing, so that both the Board and the general public are able to fully understand the details of the analysis.
- The parking changes in the Amendment must continue to meet the zoning parking ratio requirements, notwithstanding the more detailed analysis of parking supply and demand provided by the Applicant.

**Site Plan, Access, Pedestrian and Bicycle conditions, and Loading and Service Delivery:**

- There are various details that still need further review by TP&T, such as loading, service and delivery operations, pedestrian and bicycle circulation, and short-term and long-term bicycle parking.
- Access to the long-term bike parking in the basement of the building should be as convenient as possible, including the distance from the elevator, size of elevator, access routes from doorways to the public right of way, etc.
- There are some inconsistencies with the VHB memo and Amendment plans and descriptions for the number of short- and long-term bicycle spaces which should be clarified. TP&T will work with Boston Properties and CDD on the final numbers and locations for the bicycle parking as the Amendment moves forward.

- There may be some needed tweaks to the arrangement and placement of street furniture along the Main Street frontage in conjunction with the sidewalk reconstruction that will be necessitated by the project construction work. The use of the curb space in this block has changed since Main Street was reconstructed and this may provide an opportunity to better align the use of the curb with the street furnishings.

**Transportation Mitigation and Construction Management:**

- With the change to the number of vehicle parking spaces, and the relocation of Building B to Main Street, there may be reasons for additional support for non-automobile modes of travel, such as improvements to the Kendall Square MBTA headhouse and station conditions, prominence, and resiliency, as well as bicycle facilities such as Bluebikes stations. Since demands will increase significantly because of new square footage at this location, we expect that an additional Bluebikes station at this location will be needed. We will continue to work with the Applicant on these issues as they refine their streetscape design, including the interaction with the Red Line headhouse.
- The MBTA station and bus stops (including the EZRide and Cambridgeside shuttle) on Main Street are important and should be carefully considered as part of the streetscape layout. In addition, the entrance to the MBTA station and bus stops need to be prominent.
- The existing Special Permit transportation mitigation conditions for the MXD Infill Development Concept Plan should continue and not change. The Planning Board may also want to consider additional mitigation given the new Building B's impacts on Main Street in the heart of Kendall Square.
- Some items to consider may include: the sidewalk widths, coordination and agreements with the MBTA for the Kendall Square northern (outbound) headhouse and station improvements, and new or enhanced bus services to provide more frequent and reliable service to serve the economic development and growth of Kendall Square.
- The MXD Infill Development Concept Plan Amendment discussed the Kendall Square Transit Enhancement Program (KSTEP), but mostly restated what was written in the original TIS and Special Permit application. It should be updated to better include the status of the KSTEP program. The Phasing Plan should also include specific timelines or dates for the required transportation mitigation conditions in the Special Permit.
- For construction management, bus stops/loading zones on Main Street are important and access to the Kendall Square MBTA station must be provided in a safe and accessible manner throughout construction.

Finally, TP&T wants to thank Boston Properties and the Cambridge Redevelopment Authority for working with us on this exciting project and we look forward to continuing to work with them as the project moves forward.



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## MEMORANDUM

**To:** Cambridge Planning Board  
**From:** Joseph E. Barr, Director  
**Date:** January 11, 2017  
**Re:** Kendall Square Urban Renewal Plan (KSURP), MXD Infill Development Concept Plan (PB#315)

The Traffic, Parking, and Transportation Department (TP&T) has been working with Boston Properties Limited Partnership on the Special Permit Application for the proposed Kendall Square Urban Renewal Plan (KSURP) Mixed Use Development District (MXD) Infill Development Concept Plan.

### Recommended Transportation Mitigation

TP&T submitted a memo dated December 15, 2016 to the Planning Board with an overview of the transportation mitigation program that we were discussing with the applicant at that time. TPT&T has continued to work with the applicant since then and has completed a final proposed mitigation program for the KSURP MXD Infill Development Plan that is consistent with our December 15, 2016 memo but includes additional detail related to the expected scope of work and limits for reconstructions of streets, phasing for mitigation items, and trip generation triggers for the transportation monitoring program.

- Attached is TP&T's updated proposed transportation mitigation program for the Planning Board's consideration, to which the application has agreed.

### Parking

In TP&T's earlier September 14, 2016 memo to the Planning Board we recommended that the applicant provide an updated parking demand analysis to reflect the current proposed project. On behalf of the applicant, VHB Inc., submitted the attached memo dated January 4, 2017 with updated trip generation and parking demand analysis for the project. TP&T has reviewed the memo and finds that it is adequate, and offers the Planning Board our parking recommendations for consideration as conditions to the Projects Planning Board Special Permit:

- TP&T supports the project providing a maximum of 785 net new parking spaces (reduced from 809 spaces previously presented in the TIS) to support the KSURP MXD Infill Development Concept Plan.

- The Kendall Square Urban Renewal Area parking supply will change from 2,708 total existing parking spaces to 3,493 total parking spaces as shown below.

Parking Facilities/Garages	Existing Parking	Proposed New Parking for Concept Plan	Future Parking
135 Broadway/Blue Garage	1170	(-215)	955
Yellow Garage	734	0	734
Green Garage	804	0	804
Building A (145 Broadway)	0	350	350
Building B (250 Binney)	0	650	650
<b>Total Parking</b>	<b>2,708</b>	<b>785</b>	<b>3,493</b>

- The project's parking ratios will meet the zoning under Article 14 for the project as follows:
  - Office Use: Maximum 0.9 spaces/1,000 GFA)
  - Residential Use: Minimum 0.4 spaces/dwelling unit

As proposed the project will have a Maximum of 528 office use parking spaces (0.84 spaces/1,000 sf based on approximately 627,134 net new Office space GFA, and a Minimum of 257 parking spaces dedicated to residential use (0.6 spaces/dwelling unit).

- To ensure that the parking for the project's Office use does not exceed 0.9 spaces/1,000 GFA at any time, the applicant must operate the garages in a manner that such restriction will be adhered to (i.e. if residential parking demand is less than 0.6 spaces per unit during the daytime then the parking spaces should not be offered to Office employees if doing so will increase the office parking supply to above 0.9 parking spaces/1,000 GFA. Because the KSURP parking is provided at multiple locations and serves multiple uses, **the applicant should provide a proposed KSURP parking management plan and obtain approval from TP&T and CDD prior to the issuance of the project's first Occupancy Permit.** This plan must describe the system and protocols in detail on how the project will not exceed a 0.9 parking ratio for Office use at Building A (145 Broadway) and Building B (250 Binney Street) plus the additional 14,000 GFA Office conversion at the Broad Institute. For example, garage access control gates could automatically inventory the number of Office parking spaces used in the garages; whenever the total number reaches the 0.9 parking ratio for the specific buildings or uses, a sign will illuminate that the garage entrance is closed for that use. The plan should include reports provided to TP&T on a schedule mutually agreed to by TP&T and the applicant. The plan should also permit representatives of TP&T to inspect the facility and confirm the parking plan is working as intended. Other potential options could be signing parking spaces as dedicated to residents only, to prevent over allocation of office use parking spaces that exceed the approved parking ratio.

#### **Parking and Transportation Demand Management (PTDM) Plan**

The proposed KSURP Infill Development PTDM Plan has been completed and approved.

Finally, TP&T wants to thank Boston Properties and the Cambridge Redevelopment Authority for working with us on this exciting project and we look forward to continuing to work with them as the project moves forward.

Mitigation	Phasing
<p><b>Kendall Square Transit Enhancement Program (KSTEP).</b> As described in the Transportation Impact Study (TIS) and Planning Board Special Permit application, the Applicant will provide funding for the KSTEP Fund through an initial payment in the sum of six million dollars (\$6,000,000). The City and KSTEP Working Group shall meet to decide on funding allocations, as defined in the KSTEP MOU. Potential transit mitigation may include: MBTA Red Line Kendall Square improvements, Kendall Station/Kendall Square Connection Enhancements, MBTA Red Line Service Modernization Improvements, Long-Range Feasibility Investigations, proposed MBTA Bus and EZRide Shuttle Improvements, such as 2-3 years net operational cost of a bus route linking Sullivan Square with Kenmore Square via Lechmere and Kendall stations.</p>	<p>Phasing shall be as described in the MOU.</p>
<p><b>100% Design and Reconstruction of Binney Street and Galileo Galilei Way between Sixth Street and Broadway, including improvements at the intersection of Galileo Galilei Way/Broadway and respective approaches.</b> Based on the 25% streetscape redesign plans currently underway by the CRA for Binney Street and Galileo Galilei Way, the <b>Project should advance the 25% plans to 100% and build the street layout as designed in the ALTA plans along Binney Street/Galileo Galilei Way between 6<sup>th</sup> Street and Broadway.</b> The plans will include items such as, traffic signal equipment and timing, real-time vehicle/bike count stations, continuous separated bike lanes (cycle tracks), safety improvements to approaches to the major cross streets and potential bus priority treatments. The Binney/Galilei Way/Broadway signal improvements may include new mast arms, signal controllers, audible pedestrian signals (APS), vehicle detection (loops or other technology) and real time vehicle and bike count station to include vehicles and bikes traveling north, south, east and west.</p> <p>The street layout is more specifically defined as including the following elements:</p> <p><b>Surface Elements:</b></p> <ul style="list-style-type: none"> <li>• Sidewalks – fully ADA compliant (both sides of the street)</li> <li>• Cycle Tracks – asphalt – evaluate porous asphalt (both sides of the street)</li> <li>• Resetting and replacing Granite curbing as necessary (both sides of the street)</li> <li>• Roadway reconstruction – potentially full depth (City Standard base course + Asphalt) curb to curb, depending on condition of the streets and the grading changes.</li> <li>• Potential removal of median.</li> <li>• Planting areas and street trees, depending on available space.</li> <li>• Evaluate and install irrigation, depending on extent of plantings.</li> <li>• Bus shelter, benches and trash cans</li> </ul> <p><b>Utility Elements:</b></p> <ul style="list-style-type: none"> <li>• New catch basins, manholes and laterals. Infiltrating catch basins will need to be evaluated.</li> </ul>	<p>100% design shall be completed prior to issuance of a Certificate of Occupancy for the first Commercial Building constructed.</p> <p>Construction shall be completed prior to the issuance of the Occupancy permit for the 2<sup>nd</sup> Commercial building. An Occupancy Permit may be issued prior to complete reconstruction, as approved by the city, such as if the work is substantially completed or work is delayed due to circumstances which are out of the control of the developer.</p>



Mitigation	Phasing
<ul style="list-style-type: none"> <li>Existing private utilities may have to be lowered, relocated or upgraded. These would not be at the expense of the permittee, but the permittee would need to coordinate their work.</li> <li>Street lighting – if the area has older-style Kendall Square lights, they will need to be replaced with the type of lights used on Main Street – 1907 (roadway scale lighting) and Se’Lux (pedestrian scale lighting) street light fixtures. Reuse or provide new conduit, control box and hand holes as necessary.</li> <li>Traffic signals – Galileo / Broadway, Binney / Galileo / Fulkerson, and Binney / Sixth intersections will need to be replaced and/or reconfigured.</li> </ul> <p>The permittee will cooperate with the City if the design requires changes to the streetscape/sidewalk edge, including over the property line if necessary.</p> <p>The applicant will provide restriping, bicycle lane markings, and reflective pylons on both sides of the street along Galileo from Broadway to Main Street to facilitate the roadway-level connection for bicycles between the intersections of Broadway and Galileo and Main and Galileo.</p>	
<p><b>100% Design and Reconstruction of Broadway between Ames Street and Galileo Galilei Way.</b> Based on the 25% streetscape redesign plans currently underway by the CRA, the Project should advance the 25% plans to 100% and <b>build the street layout as designed in the ALTA plans along</b> Broadway between and including, as needed, Ames Street and Galileo Galilei Way, including the crossing of the Grand Junction pathway on Broadway. Improvements may include items such as: traffic signal equipment and timing, real-time vehicle/bike count stations, road diets, transit priority treatments, bus/shuttle stop amenities, separated bicycle facilities/cycle tracks, pedestrian improvements, and reconfigured area for hotel drop-off/pick-up and taxi stand assuming the willing cooperation of impacted private property owners other than the permittee. The permitted will cooperate with the City if the design requires changes to the streetscape/sidewalk edge, including over the property line if necessary.</p> <p>The street layout more specifically defined as including the following elements:</p> <p><b>Surface Elements:</b></p> <ul style="list-style-type: none"> <li>Sidewalks – fully ADA compliant (both sides of the street)</li> <li>Cycle Tracks – asphalt – evaluate porous asphalt (both sides of the street)</li> <li>Resetting and replacing Granite curbing as necessary (both sides of the street)</li> <li>Roadway reconstruction – potentially full depth (City Standard base course + Asphalt) curb to curb, depending on condition of the streets and the grading changes.</li> <li>Potential removal of median.</li> <li>Planting areas and street trees, depending on available space.</li> <li>Evaluate and install irrigation, depending on extent of plantings.</li> </ul>	<p>100% design shall be completed prior to issuance of a Certificate of Occupancy for the first Commercial Building constructed.</p> <p>Construction shall be completed prior to the issuance of the Occupancy permit for the 2<sup>nd</sup> Commercial building. An Occupancy Permit may be issued prior to complete reconstruction, as approved by the city, such as if the work is substantially completed or work is delayed due to circumstances which are out of the control of the developer.</p>

Mitigation	Phasing
<ul style="list-style-type: none"> <li>• Bus shelter, benches and trash cans</li> </ul> <p><b>Utility Elements:</b></p> <ul style="list-style-type: none"> <li>• New catch basins, manholes and laterals. Infiltrating catch basins will need to be evaluated.</li> <li>• Existing private utilities may have to be lowered, relocated or upgraded. These would not be at the expense of the permittee, but the permittee would need to coordinate their work.</li> <li>• Street lighting – if the area has older-style Kendall Square lights, they will need to be replaced with the type of lights used on Main Street – 1907 (roadway scale lighting) and Se’Lux (pedestrian scale lighting) street light fixtures. Reuse or provide new conduit, control box and hand holes as necessary.</li> <li>• Traffic signals – Galileo / Broadway intersection will need to be replaced and/or reconfigured.</li> </ul>	
<p><b>Maintain sidewalks and protected bicycle facilities (i.e. cycle tracks) on Binney Street and Galileo Galilei Way between/including 6<sup>th</sup> Street and Main Street, and Broadway between/including Ames Street to Galileo Galilei Way.</b> The Applicant shall be responsible for maintenance such as, debris, snow and ice removal, crack repair, etc.</p>	<p>Ongoing following construction of the cycle tracks.</p>
<p><b>Hubway Stations.</b> Finance the purchase and installation of either A.) Two (2) 19 dock Hubway stations or B.) One (1) 27 dock Hubway station and expand the existing Binney Street station to a 27 dock station. The City and BP shall identify mutually acceptable location(s) for the Hubway station(s).</p>	<p>Initial payment for equipment to be made to the City before the first Building Permit, excluding Demolition permits.</p>
<p><b>Hubway Maintenance and Operations.</b> Pay ongoing annual operations and maintenance fees to the City for the Hubway Station(s).</p>	<p>Annual operations and maintenance fees shall be paid to the City before June 1st in the year the Hubway Station is expected to be installed, and ongoing before June 1st annually.</p>
<p><b>Sixth Street Connector Pathway Improvement.</b> Improve the Sixth Street Connector Pathway by providing separated pedestrian and bicycle facilities while maintaining the mature trees along the existing pathway. The design of the pathway shall be approved by the Community Development Department, Department of Public Works and Cambridge Redevelopment Authority, and shall align with the future cycle track on Ames Street. As currently maintained today, the Applicant shall be responsible for maintaining the Sixth Street Connector pathway for bicycles and pedestrians.</p>	<p>Construction to be completed prior to the issuance of the Occupancy Permit for the first Commercial building constructed. Maintenance of pathway to be ongoing.</p>
<p><b>Wayfinding and Real-time Transit and Hubway screens.</b> Provide real-time transit screens in the public plaza framed by the Marriott Hotel and 50 Broadway, and 255 and 325 Broadway on Parcel 4. Transit screens shall also be provided in lobbies of new commercial buildings.</p>	<p>Prior to the issuance of the Occupancy Permit for the first Commercial building constructed.</p>



Mitigation	Phasing
<p><b>Grand Junction.</b> The Applicant shall continue to cooperate and coordinate with the City and CRA on the Grand Junction pathway connections at intersections.</p>	<p>Ongoing.</p>
<p><b>MBTA Red Line Station on North Side of Main Street.</b> The Applicant should construct no more than \$400,000 in improvements to the MBTA Red Line Outbound Station on the north side of Main Street. These improvements shall be based on the MBTA's state of good repair needs assessment and shall include items such as safety and accessibility improvements, head house and platform flooring, walls and ceiling conditions, drainage, real-time transit screens on the outside (sidewalk side), climate resiliency, wayfinding, aesthetics improvements, etc.). Any feasible platform improvements should also not be precluded, including measures that may improve boarding/alighting from trains which may benefit train dwell times/headways/frequency/reliability.</p>	<p>Improvements to be approved by the City and MBTA and funded prior to the issuance of the Occupancy Permit for the first Commercial building constructed, and shall be substantially completed prior to the issuance of the Occupancy Permit for the second Commercial building constructed.</p> <p>An Occupancy Permit may be issued prior to completion of this work, as approved by the city, such as if the work is substantially completed or work is delayed due to circumstances which are out of the control of the developer.</p>
<p><b>Loading Dock and Traffic Management Plan.</b> The Permittee shall provide a loading dock and traffic management plan for City approval. The Property Owner shall monitor operations and if the operations cause issues on public users and infrastructure (e.g. vehicles blocking other users or parking illegally) then BP will work with the City to resolve it.</p>	<p>Prior to the issuance of a Certificate of Occupancy of the commercial building and ongoing. Plan may be later amended with TP&amp;T approval.</p>

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Residential Transportation Demand Management Measures (TDM).	Ongoing after issuance of Occupancy Permit of the residential building.
1. Make available a minimum of 10 carsharing parking spaces in the Blue (North) Garage for a vehicle-sharing company. As demand dictates additional carsharing vehicles will be added over time. Provide additional designated car-sharing parking spaces within and/or nearby by KSURP parking garages, if deemed feasible. (These are designated and priority spaces for carsharing users arriving for short-periods of time which is different than carsharing spaces that “live” in the parking garages.	Ongoing after issuance of Occupancy Permit for the residential building.
Provide electric vehicle (EV) charging stations (1 EV space per 100 auto parking spaces, i.e. 10 EV spaces in the Blue Garage) and preferential parking to alternative fuel vehicles, as dictated by the market.	Ongoing after issuance of Occupancy Permit of the residential building.
2. Offer each adult member of each household (up to 2) upon move-in a Charlie Card valued at the cost of a 50% bus/subway pass (subject to fare increases) for 3 consecutive months. This benefit will end after 3 months for the household and begins anew upon unit turnover.	Ongoing after issuance of Occupancy Permit of the residential building.
3. Offer each adult member of each household (up to 2) upon move-in a 1-year Gold-Level Hubway membership. This benefit will end after one year for the household and begins anew upon unit turnover.	Ongoing after issuance of Occupancy Permit of the residential building.
4. Provide air pumps and other bike tools in the bicycle storage room.	Prior to the issuance of Occupancy Permit of the residential building.
5. Join the Charles River Transportation Management Association (TMA)	Ongoing after issuance of Occupancy Permit of the residential building.
6. Provide free EZRide Shuttle sticker for each adult member of each household each year.	Ongoing after issuance of Occupancy Permit of the residential building.
7. Charge parking (market rate) separately from the residential rent, in order to remind tenants how much they pay for parking. The Permittee shall provide the summary of on-site parking fees to the TP&T.	Ongoing after issuance of Occupancy Permit of the residential building.
8. Either install a real-time multimodal transportation display screen to help people decide which mode to choose for each trip (transit, carsharing vehicle, Hubway bike share, etc.), or establish a transportation information center located in an area that is central, visible, convenient, and equally accessible to all residents and visitors. The center will feature information on: a. Available pedestrian and bicycle facilities in the vicinity of the site b. MBTA maps, schedules, and fares c. Area shuttle map and schedule, if one exists d. “Getting Around in Cambridge” map and other CitySmart materials (available at the Cambridge Community Development office) e. Location of bicycle parking f. Hubway regional bikeshare system g. Carsharing h. Ride-matching i. Other pertinent transportation information	Prior to the issuance of Occupancy Permit of the residential building.

<p>9. Designate a Transportation Coordinator (TC) for each residential building or the site to manage the TDM program. The TC will also oversee the marketing and promotion of transportation options to all residents at the site in a variety of ways:</p> <ul style="list-style-type: none"> <li>a. Posting information in a prominent location in the building and on the Project's website, social media, and property newsletters.</li> <li>b. Responding to individual requests for information in person and via phone and email</li> <li>c. Performing annual transportation surveys.</li> </ul>	<p>Ongoing after issuance of Occupancy Permit of the residential building.</p>
<p>10. Require the TC to compile and distribute up-to-date information explaining all transportation options to all new residents as part of their New Resident Packet. The packets will contain information on both the range of options available to any building manager programs to support the use of these options and will include:</p> <ul style="list-style-type: none"> <li>a. Available pedestrian and bicycle facilities in the vicinity of the site</li> <li>b. MBTA maps, schedules, and fares</li> <li>c. Area shuttle map and schedule, if one exists</li> <li>d. "Getting Around in Cambridge" map and other CitySmart materials</li> <li>e. Location of bicycle parking</li> <li>f. Hubway regional bikeshare system</li> <li>g. Carsharing</li> <li>h. Ride-matching</li> <li>i. Other pertinent transportation information</li> </ul>	<p>Ongoing after issuance of Occupancy Permit of the residential building.</p>
<p>11. Require that the TC will be on-site during a minimum of 2 hours per week and will be available during other times to residents via email and telephone. Email and phone information for the TC will be posted in the transportation information center.</p>	<p>Ongoing after issuance of Occupancy Permit of the residential building.</p>
<p><b>Loading Dock/Residential Move-In/Move-Out Traffic Management Plan.</b> The Permittee shall provide a loading dock/resident move-in/move-out, and traffic management plan for City approval. The Property Owner shall monitor operations and if the operations cause issues on public users and infrastructure (e.g. vehicles blocking other users or parking illegally) then BP will work with the City to resolve it.</p>	<p>Prior to the issuance of a Certificate of Occupancy of the residential building and ongoing. Plan may be later amended with TP&amp;T approval.</p>
<p><b>Transportation Monitoring.</b> The Permittee shall commit to a transportation monitoring program and mitigation measures whose effectiveness is commensurate with the triggers established in the <b>Recommended Transportation Monitoring Program.</b></p>	<p>Annual and Biennial monitoring reports as described in the Recommended Transportation Monitoring Program.</p>

### **Recommended Transportation Monitoring Programs for KSURP Infill Concept Plan**

In order to be assured that the Kendall Square Urban Renewal Plan MXD Infill Concept Plan is meeting the traffic generation targets that are the basis for approval of the Concept Plan on an ongoing basis, the Project shall be required to monitor the project's traffic generation and mode splits as buildings are built and occupied.

#### **Residential Transportation Monitoring Program**

The residential buildings will have residential Transportation Demand Management measures.

To monitor the traffic generation, parking demand and utilization, the Permittee shall implement a monitoring program to include: annual monitoring of mode split for all trips; biennial garage driveway counts; biennial counts of parking space utilization (vehicles and bikes); and a detailed survey of the residents with regard to their pattern of trips, auto and bicycle ownership or leased, and where the residents customarily store such vehicles overnight. All surveys and counts shall be designed and conducted in a manner approved by the CDD and TP&T. Approval of the form of any survey instrument or monitoring method is required before issuance of the first Certificate of Occupancy for the Residential Building.

Monitoring and surveying shall begin when Occupancy of the residential building has reached fifty (50%) or within one year of the date of the issuance of the first Certificate of Occupancy, whichever is sooner. If the Certificate of Occupancy is issued between September 1<sup>st</sup> and February 29<sup>th</sup>, the monitoring should take place during the months of September or October and be reported to the City no later than November 30. If the Certificate of Occupancy is issued between March 1<sup>st</sup> and August 31<sup>st</sup>, monitoring should take place during the months of April or May and be reported to the City no later than June 30.

#### **Non-Residential Transportation Monitoring Program**

Using data collected as part of the PTDM Plan, KSURP traffic data collection as required under Section 61 Findings, and supplemented when necessary, the Permittee will provide to TP&T and CDD transportation monitoring reports. All surveys and counts shall be designed and conducted in a manner approved by the CDD and TP&T, and shall include the following information:

- Annual mode split surveys reported to CDD and TP&T (may use the annual PTDM monitoring reports).
- Biennial driveway counts, auto and bicycle parking utilization surveys (may use biennial PTDM driveway counts).
- Biennially when driveway counts and vehicle/bicycle parking counts are collected, a Project Vehicle and Transit Trip Generation report shall be provided to TP&T and CDD in a format approved by TP&T and CDD. The primary focus of the report will be to compare the TIS PM peak hour vehicle and transit trip generation estimates with actual trip generation. The trip generation monitoring and thresholds will be based on the Project's Office, Laboratory and Retail trips.

If any monitoring report submitted during the build-out of the project determines that trip generation for existing occupied office, lab and retail\_GFA exceeds **300 PM vehicle trips** or **exceeds 390 PM transit trips**, then new driveway counts and trip generation report must be provided the following year (instead of biennially), and if trip generation continue to exceed the vehicle trip or transit trip thresholds then additional TDM and infrastructure improvements commensurate with the level of exceedance, as described below must be implemented to keep trips at or below the levels projected in the January 4, 2017 trip generation update memo by VHB.

During the course of the project build-out, the PM vehicle and transit trips will be compared to the TIS estimates on a proportional basis related to project build-out or reflective of the building specific TIS trip generation estimates, to determine if the project trip generation is on target with the TIS assumptions. This will allow the permittee to make voluntary adjustments to its demand management programs to reduce the likelihood that the overall trip generation targets will be exceeded.

A final number of PM peak hour vehicle trips will be provided and certified by TP&T and CDD. The PM peak hour thresholds are as follows:

**Trip Generation Thresholds (2015 Kendall Square Redevelopment TIS Estimates\*)**

	<u>PM peak hour trips</u>
Vehicle	300
Transit	390

\*Vehicle and Transit trips calculations are based on VHB's January 4, 2017 updated TIS trip generation estimates for PM peak hour Office and Retail uses: 51 PM Peak hour retail vehicle trips + 250 PM Peak hour Office vehicle trips = 301, rounded to 300 PM Peak hour vehicle trips. 66 PM Peak hour retail transit trips + 326 PM Peak hour Office transit trips = 392, rounded to 390 PM Peak hour transit trips. Source is January 4, 2017 KSURP Infill Development Estimated Trip Generation. Residential trips are not included in the Trip Generation thresholds.

If monitoring indicates trip generation in excess of the thresholds above, and if MBTA and private (open to the public) transit capacity has not improved (a 5% or greater increase in calculated number of passengers accommodated in the PM peak hour), the proponent will work with the City staff to identify and implement additional mitigation measures intended to reduce auto mode share or peak hour vehicle trip generation or assist in improving transit options or shifting transit trips to walking and bicycle trips. The measures the proponent will consider include the following items or others that may have similar or better results and will be determined in consultation with the City of Cambridge. The proponent will commit to implement measures whose effectiveness is commensurate with the exceedance. Possible measures may include but are not limited to the following:

**If exceeding vehicle trips threshold:**

Shift vehicle trips to other modes and make sure that any measures that shift trips do not trigger other trip thresholds.

- Increase parking rate to market rate.
- Increased MBTA pass subsidies.
- Larger financial incentives for formation of vanpools/additional carpools.
- Acceleration of implementation of planned transit, bike infrastructure or TDM programs.
- Free bikes as rewards for not driving.
- Additional, reasonable measures as mutually agreed upon by the Permittee and the City.

**If exceeding Transit trips threshold** only if MBTA and private transit (open to the public) capacity has not been improved (a 5% or greater increase in calculated number of passengers accommodated in the peak hour):

- Contribute an additional \$500,000 to the City of Cambridge of KSTEP fund as approved by the City, to be established by the City, which shall be used to fund the cost of improving transit access to Kendall Square. The \$500,000 funds will be in addition to the initial \$6,000,000 for the KSTEP program and addition to other ongoing funding mechanism established by the KSTEP program for long-term sustainability of the KSTEP program.
- Shift transit trips to walking, bicycling and/or improve transit services.
- Provide additional bicycle parking facilities.
- Financial incentives for walking and biking.
- Additional, reasonable measures as mutually agreed upon by the Permittee and the City.

Methodology for determining Vehicle and Transit trip generation:

A combination of methods will be used to measure vehicle trips generated by the project including, but not limited to the following:

- Vehicle trips into and out of the project garages through actual car counts obtained from garage gates. Data should indicate the type/user of the vehicles entering/exiting (i.e. commercial office or laboratory employees or visitors, retail employees or patrons, academic uses, other). Data should be provided and summarized for daily, hourly, and peak hours. PM peak hour is the threshold.
- The counts will be supplemented with surveys of office and laboratory employees, visitors, and retail employees and patrons, to obtain information on number of vehicle trips during PM peak hour, location of parking (on-site or off-site), and whether dropped-off or picked up by vehicle.
- PM peak hour transit trips will be calculated based on number of employees, transit mode share, arrive/departure times, MBTA Charlie cards issued or subsidized will also be reported for office, laboratory and retail uses to help verify the PM transit trip information.

For the purposes of this agreement, the transit capacity of approximately 23,600 (23,679) passengers in the peak hour as presented in the KSRUP TIS (Table 10a.1 System Peak Hour Capacity (Per MBTA Data) from page 87 of the TIS, shown below, will be utilized as the base number of passenger accommodated on the MBTA and private transit (open to the public).

**TABLE 10.A.1 SYSTEM PEAK HOUR CAPACITY (PER MBTA DATA)**

Mode	Frequency <sup>(a)</sup>	OTP Factor <sup>(b)</sup>	# Passengers / Vehicle <sup>(c)</sup>	# Cars / Train	Resulting Capacity <sup>(d)</sup> (# Passengers / Peak Hour)
<b>Red Line</b>					
Inbound	13	0.848	167	6	11,046
Outbound	13	0.848	167	6	11,046
<b>MBTA Bus</b>					
64 Inbound	2.5	n/a	54	n/a	135
64 Outbound	3	n/a	54	n/a	162
68 Inbound	2	n/a	54	n/a	108
68 Outbound	2	n/a	54	n/a	108
85 Inbound	2	n/a	54	n/a	108
85 Outbound	2	n/a	54	n/a	108
CT2 Inbound	3	n/a	54	n/a	162
CT2 Outbound	3	n/a	54	n/a	162
<b>EZRide Shuttle</b>					
Inbound	7	n/a	40	n/a	267
Outbound	7	n/a	40	n/a	267

## Notes:

- (a) Number of vehicles per hour, per MBTA published schedules (Red Line) and MBTA Ridecheck Fall 2014 (Buses)
- (b) On Time Performance Factor from 2015 MBTA Annual Report
- (c) Number of policy level capacity per MBTA Blue Book 14<sup>th</sup> Edition (Red Line and Buses) and EZ Ride Feasibility Study (March 2015)
- (d) Calculated Capacity = #of Trains x OTP factor x # pax per vehicles x # cars – shown as number of passengers per peak hour